Higher Education Programme Characteristics on Graduates' Performance

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Introduction

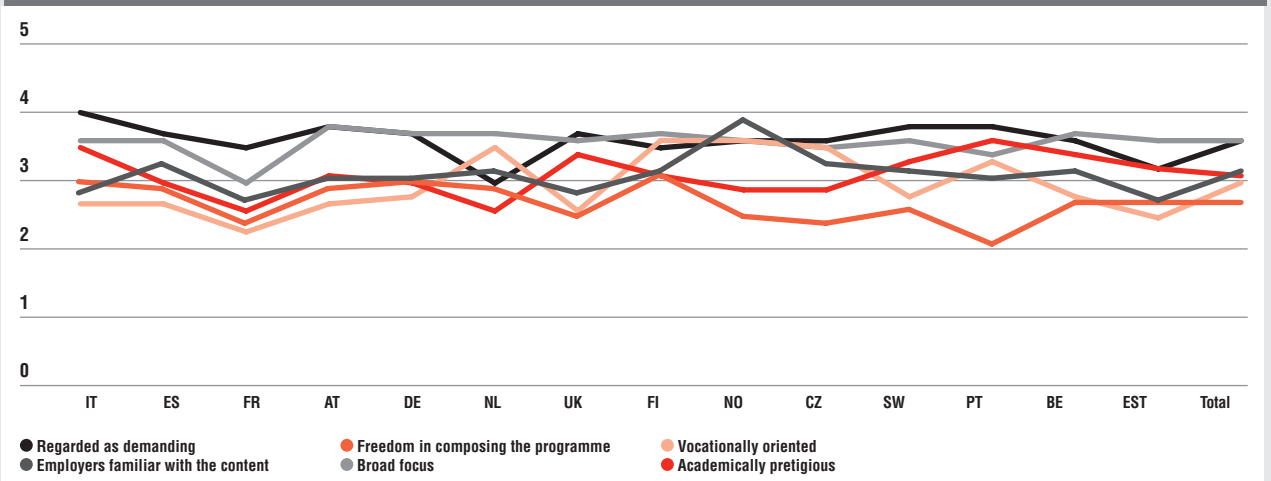
The role of higher education (HE) in the process of local and regional economic development has attracted considerable interest among scholars and policy makers. There is ample evidence confirming that the presence of skilled labour force contributes local economic development by fostering productivity effects via local knowledge spill overs and human capital externalities. In this context, educational programmes are designed aiming at the preparation of the high qualified young population for fulfilling responsible roles in professional life in specific and in society in general. Here, we focus on the significance of a number of HE programme characteristics in allocating young HE graduates across the labour market and how these graduates perform in their jobs. Graduate performance is analysed in terms of both monetary and non-monetary pay-offs. Findings show that education programmes in which learning is linked to acquisition of work experience result in better paid employment, although an appropriate balance between theoretical and practical-oriented curricula is important.

Data and Methods

The REFLEX (Flexible Professional in the Knowledge Society) survey is the source of the data for the present study (Allen and Van der Velden, 2011). Graduates in the year 2000 were surveyed in 2005, five years after graduation. We have information around 2,600 graduates from each of 14 European countries (Italy, Spain, France, Austria, Germany, the Netherlands, the United Kingdom, Finland, Norway, Czech Republic, Switzerland, Portugal, Belgium and Estonia), obtained from a written questionnaire on graduates' retrospective views of their HE experience. We select individuals between 26 and 35 years of age who worked for at least 10 hours per week either as employee or self-employed.

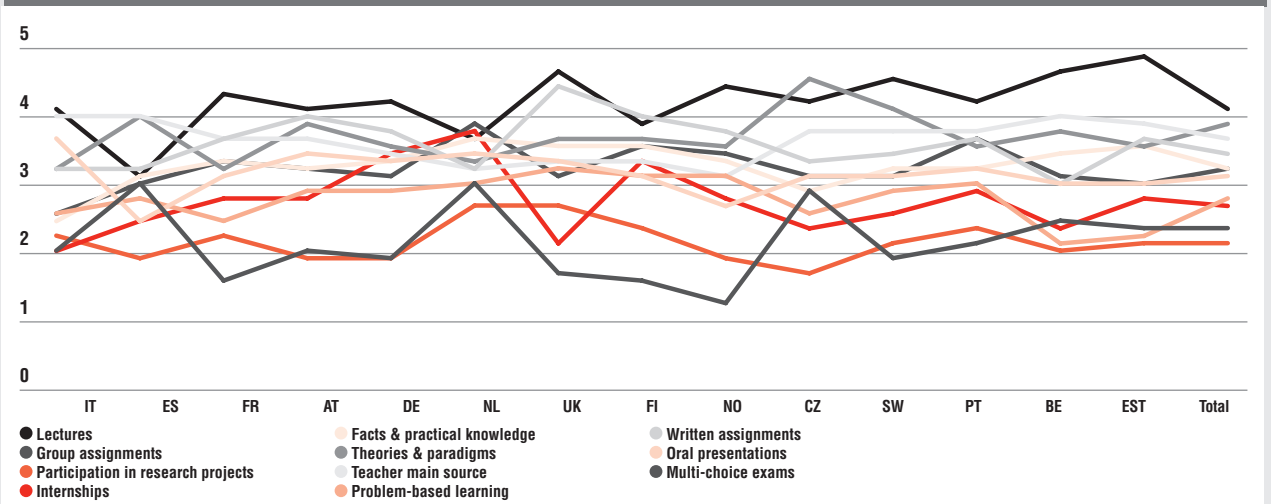
Some questionnaire items, in particular six, were related to description of the study programme. Graduates were asked to indicate the extent to which these items applied to their own study programme on a 1 (not at all) to 5 (very much) scale. Figure 1 presents the average ratings for these items by country. Results show that, on average, the highest scores were assigned to the demanding of the programme and whether it had a broad focus. Freedom

Figure 1. Description applied to the study programme by country



Source: Own elaboration, REFLEX data.

Figure 2. Modes of teaching and learning emphasized in the study programme by country



Source: Own elaboration, REFLEX data.

Table 1. Monetary and non-monetary returns by country		
Country	**Earnings/hour (euro)**	**Job Satisfaction (scale 1 to 5)**
Italy	10,23	3,63
Spain	10,71	3,71
France	14,25	3,84
Austria	14,56	4,01
Germany	18,73	3,86
The Netherlands	14,66	3,78
United Kingdom	14,94	3,73
Finland	13,81	3,71
Norway	17,05	3,95
Czech Republic	8,72	3,91
Switzerland	18,82	3,90
Portugal	12,39	3,66
Belgium	15,99	3,90
Estonia	8,84	3,88
Total	**13,40**	**3,82**

Source: Own elaboration, REFLEX data.

in design a personal programme was rated low. Finland, Norway, the Netherlands, Czech Republic and Portugal stressed practical learning/experience items, such as vocational orientation of the study programme, while graduates from Italy, Spain, France, Austria, Belgium, Germany, Switzerland, the United Kingdom and Estonia rated this item low.

In addition, eleven items in the questionnaire were related to the modes of teaching and learning emphasized in the study programme. Respondents were asked to rank the extent to which these modes of teaching and learning were stressed during HE, on a 1 (not at all) to 5 (very much) scale. Figure 2 presents the average ratings for these items by country. In general, items related to teaching, such as regular attendance at lectures, theories and paradigms and teacher being the main source of information were rated quite high. Among countries, there seems to be a negative relationship between the extent to which the teacher is regarded as the main source of information and a more project and problem-based learning. Moreover, it seems there is a negative relationship between emphasis on theories and paradigms and emphasis on facts and practical knowledge. HE seems to lean towards more theoretical rather than practical. In the Czech Republic, HE seems to be predominantly theoretical, but in France and the Netherlands the emphasis is practical rather than theoretical.

Based on the above characteristics of the academic environment, we would expect to find differences in graduates' rewards, both monetary and non-monetary. Table 1 shows that the average hourly wage was around €13.40. Earned income was higher than average for graduates in Switzerland, Germany, Norway and Belgium; and lower than average for graduates in the Czech Republic, Estonia, Italy, Spain and Portugal. To assess job satisfaction, the REFLEX survey asked on a scale of 1 (very dissatisfied) to 5 (very satisfied): 'How satisfied are you with your current work?' Table 1 also shows that levels of job satisfaction are quite similar across countries. This latter finding would be surprising if we expected graduate job satisfaction to be determined by similar academic environment and work situation characteristics across countries. Nevertheless, other factors are also influential. Therefore, we analyse the influence of programme characteristics on graduates' performance in two complementary ways, in terms of both graduates' income and job satisfaction. For income, we follow a conventional earning regression (natural logarithm of income). For job satisfaction, we use an ordered probit model to reflect its ordinal character (graduates' self-assessment of job satisfaction scores on a scale from 1 to 5). The explanatory variables were classified into three categories representing diverse elements that could influence both income level and self-assessed job satisfaction scores: individual-specific characteristics (gender, age, parents' level of education), educational and academic environment factors (field of study, study programme description, modes of teaching and learning), and labour-market status variables (private *versus* public sector, permanent *versus* temporary contract, full-time *versus* part-time job, occupational titles, etc.).

Monetary and non-monetary pay-offs to the educational programme

Table 2 presents the returns on educational programme characteristics on the labour market in terms of both graduates' income and job satisfaction. Regarding income, we find female graduates earned less than their male counterparts, and age (capturing work experience) and father's educational level had a positive effect. When exploring the segmentation of educational fields, we observe that graduates in Education, Humanities, Natural Science, Engineering and Medical Sciences earned less with respect to the reference category (Social Science). However, Mathematics graduates earned more. Moreover, a well-designed degree programme, that is, academically prestigious, the flexibility to combine course and areas of specialization, and which is seen as demanding, contributes to earning differentials. However, if the teaching and learning modes emphasize the teacher as the main source of information and participation in research projects, this negatively influences the access to better job opportunities. As we expect, those working in a private sector or with permanent contracts earned more than those working in public sectors or with temporary contracts. Negative effects were also found in full-time jobs and working in small firms. Other results were contrary to what we would expect on the basis of assignment theory – wages premiums for over-educated (and surplus in competencies) and wage penalties for under-educated (and deficit in competencies). Legislators, senior officials and managers earned more than their counterparts at elementary occupations. Finally, we observe the earning differences in the European countries, in size as well as in composition. Compared to those graduates in Germany (the omitted category), graduates from Southern European countries earned less than those from Nordic European countries, with the exception of those graduated in Switzerland.

Regarding job satisfaction, women graduates reported higher levels of satisfaction than their male counterparts. Older graduates tend to be less satisfied with their jobs. Those graduated in Education, Humanities and Natural Sciences were more satisfied with their jobs than those graduated in Social Science. A well-designed degree programme, that is, broadly focused, vocationally oriented and whose content and objectives are known to employers, attracts higher scores for job satisfaction. Also, if the teaching and learning modes emphasize the participation in research projects and learning in groups as opposed to individual learning assignments, this positively influences job satisfaction. However, the value of facts and practical knowledge negatively influences the level of job satisfaction. As one might expect, graduates working in the public sector were more satisfied than those in the private sector, and those holding a permanent contract were also more satisfied than those holding a temporary contract. The use at work of the knowledge and skills that graduates acquired during their studies, and the match between the level of education attained and the level of education required in the job, raised job satisfaction. With respect to occupational titles, legislators, senior officials,

managers and professionals were more satisfied than their counterparts in elementary occupations; finally, graduates from the Netherlands, the United Kingdom and Portugal were less satisfied compared to graduates from Germany.

Table 2. Pay-offs to the educational programme for young European graduates

Explanatory variables	Monetary Returns: Income		Non-monetary returns: Job Satisfaction	
	Coef.	z-values	Coef.	z-values
Individual characteristics				
Female	-0,0814	-15,28	0,0667	3,73
Age	0,0118	9,00	-0,0254	-5,76
Father's higher education	0,0262	4,67	-0,0163	-0,87
Mother's higher education	0,0019	0,31	-0,0249	-1,19
Field of study (ref. Social Science)				
Education	-0,0569	-5,62	0,1629	4,77
Humanities	-0,0798	-8,01	0,1439	4,31
Law	-0,0280	-2,44	0,0055	0,14
Natural Sciences	-0,0976	-8,84	0,1640	4,42
Mathematics	0,0276	2,16	0,0039	0,09
Engineering	-0,0412	-5,68	0,0283	1,17
Medical Sciences	-0,0806	-8,61	-0,0071	-0,23
Study programme description				
It was regarded as demanding	0,0082	2,59	0,0047	0,44
Employers are familiar with the content	0,0026	1,12	0,0337	4,27
Freedom in composing the programme	0,0102	4,40	0,0063	0,81
It had a broad focus	0,0024	0,95	0,0206	2,43
It was vocationally orientated	0,0011	0,42	0,0171	2,00
It was academically prestigious	0,0225	8,60	0,0120	1,37
Modes of teaching and learning				
Lectures	0,0039	1,49	0,0077	0,88
Group assignments	-0,0029	-1,10	0,0186	2,09
Participation in research projects	-0,0083	-3,19	0,0261	3,00
Internship, work placement	-0,0008	-0,35	0,0072	0,94
Facts and practical knowledge	-0,0036	-1,34	-0,0168	-1,88
Theories and paradigms	0,0029	1,08	0,0234	2,62
Teacher as the main source of information	-0,0102	-3,86	0,0236	2,67
Project and/or problem-based learning	0,0002	0,08	-0,0074	-0,86
Written assignments	-0,0022	-0,89	0,0027	0,32
Oral presentation by students	-0,0063	-2,43	0,0137	1,57
Multiple choice exams	0,0015	0,65	0,0139	1,79
Job characteristics				
Hourly wage (log)	'--	'--	0,3589	14,73
Private sector	0,0951	16,61	-0,2259	-11,69
Permanent contract	0,1351	21,45	0,0943	4,43

Table 2. Pay-offs to the educational programme for young European graduates

Explanatory variables	Monetary Returns: Income		Non-monetary returns: Job Satisfaction	
	Coef.	z-values	Coef.	z-values
Full-time job	-0,2614	-36,94	0,0962	3,92
Size firm (<50 workers)	-0,1283	-22,65	0,0370	1,93
Appropriateness of qualifications				
Qualifications used at work	0,0292	5,12	0,6894	35,96
Under-educated	0,0193	2,73	0,0393	1,65
Over-educated	-0,1484	-18,38	-0,3956	-14,70
Deficit in competencies	-0,0172	-2,66	0,1151	5,33
Surplus in competencies	-0,0071	-1,27	-0,0362	-1,95
Universities vs HEIs	0,0086	1,16	-0,0033	-0,13
Occupational titles (ref. Professionals)				
Legislators, senior official and managers	0,1063	11,56	0,1252	4,03
Technicians and associate professionals	-0,0577	-9,16	0,0693	3,29
Clerks	-0,2180	-17,50	0,0095	0,23
Service workers and other occupations	-0,2070	-13,16	0,0843	1,61
Country dummies (ref. Germany)				
Italy	-0,5456	-32,15	-0,0697	-1,20
Spain	-0,4555	-27,99	0,0029	0,05
France	-0,2514	-14,04	0,0511	0,84
Austria	-0,2494	-14,22	0,1835	3,09
The Netherlands	-0,1558	-9,91	-0,1678	-3,18
United Kingdom	-0,1392	-7,49	-0,2447	-3,92
Finland	-0,2594	-16,17	-0,2591	-4,80
Norway	-0,0596	-3,56	-0,0068	-0,12
Czech Republic	-0,7772	-50,13	0,1957	3,54
Switzerland	0,0118	0,83	0,0111	0,23
Portugal	-0,4415	-18,99	-0,3812	-4,88
Belgium	-0,0811	-4,35	-0,0905	-1,45
Estonia	0,7654	-39,00	0,0415	0,61
Intercept	2,5480	49,55		
Observations	19,084		19,084	
Prob> F; Pro > χ^2	0,0000		0,0000	
R-squared; Log likelihood	0,5429		-23,733	

Conclusions

The results show that a well-designed degree programme, that is, broadly focused, academically prestigious, vocationally oriented, and whose content and objectives are known to employers, contributes to an increase in earnings and attracts higher scores for job satisfaction. Moreover, it seems that practice-oriented curricula have negative effects: the value of facts and practical knowledge and participation in internship programmes negatively influences both income and job satisfaction. These results could reflect the lack of complementary between the theoretical content of the course and the practical knowledge. Young HE graduates might be more successful in the labour market if they can achieve an appropriate balance between theoretical and practical-oriented learning in HE.

Furthermore, this study offers useful insights into how graduates might prepare for joining the workforce and how governments, universities, employers and teachers could support these efforts. The results indicate that apart from educational characteristics, structural and institutional factors shape graduates' success in the labour market. Universities should support students' preparation for entering the workforce by focusing on the relevance to labour market needs of their graduate education programmes (study programmes should be demanding, academically prestigious and vocationally oriented) through close interaction with employers (employers should be familiar with study programme content). Employers could be invited to participate in reviewing and developing curricula and to provide proper internships for students. Teachers should shape their teaching modes to facilitate learning processes, and improve problem-based learning and teaching of facts and practical knowledge, and should be supported by their institutions and HE systems. Government needs to enhance partnerships and dialogue between HE providers and employers, and support cultural change to promote closer interaction among them that goes beyond joint research aimed at accessing university funding.

References

Allen, J.; Van der Velden, R. (eds) (2011). *The Flexible Professional in the Knowledge Society: General Results of the REFLEX Project*. Maastricht University. http://www.fdewb.unimaas.nl/roa/reflex/